THE CLAIMS

What is Claimed is:

1.   A method for generating a continuous mathematical model of a feature common to subjects in a subject group, said method comprising:

selecting a sample data set from each subject in the subject group;

selecting a set of expansion functions to be used in the representation of the sample data set;

mathematically expanding each member of said sample data set in the form of a summation of results of multiplying each said expansion function in said set of expansion functions by a different mathematical parameter wherein said expanding determines a value for each of said different mathematical parameters;

deriving a corresponding distribution function for each of said mathematical parameters; and

generating the continuous mathematical model of the feature from said derived distribution functions and said expansion functions.

2.   A method in accordance with Claim 1, wherein said mathematically expanding is accomplished using a Fourier expanding function.

3.   A method in accordance with Claim 1, wherein said mathematically expanding is accomplished using a Hybrid expanding function.

4.   A method in accordance with Claim 1, wherein said feature is a physiological condition affecting said subject group.

5.   A method in accordance with Claim 4, wherein said physiological condition is a disease.

6.   A method in accordance with Claim 2, wherein said mathematical parameters are coefficients of said Fourier expanding function.

7.   A method in accordance with Claim 1, wherein said determined value of said parameters is an estimated value of said parameters.

8.   A method in accordance with Claim 1, further comprising:
          generating a simulated subject from said continuous mathematical model.

9.   A method in accordance with Claim 6, wherein each expansion function is a deterministic function of age of each subject.

10.   A method for generating a continuous mathematical model of a feature common to subjects in a subject group, said method comprising:
          selecting a sample data set from each subject in the subject group;
          selecting a set of expansion functions to be used in the representation of the sample data set;
          mathematically expanding each member of the sample data set in the form of a summation of results of multiplying each said expansion function in said set of expansion functions by a plurality of different mathematical parameters wherein said expanding determines a value for each of said plurality of mathematical parameters;
          deriving a corresponding distribution function for each of said plurality of mathematical parameters; and
          generating the continuous mathematical model of the feature based on said derived distribution functions and said expansion functions.

11.   A method in accordance with Claim 10, further comprising:
          determining existence of dependency correlations between said mathematical parameters in said plurality of mathematical parameters; and

decorrelating said determined correlated mathematical parameters, wherein said generating the continuous mathematical model of the feature is also based on said generated probability distribution and said decorrelating.

12.   A method in accordance with Claim 11, wherein said dependency correlations are first order dependency correlations.

13.   A method in accordance with Claim 10, wherein said mathematically expanding is accomplished using a Fourier expanding function.

14.   A method in accordance with Claim 10, wherein said mathematically expanding is accomplished using a Hybrid expanding.

15.   A method in accordance with Claim 13, wherein said mathematical parameters are coefficients of said Fourier expanding function.

16.   A method in accordance with Claim 10, wherein said determined value of said mathematical parameters is an estimated value of said mathematical parameters.

17.   A method in accordance with Claim 10, further comprising:
         generating a simulated subject from said continuous mathematical model.

18.   A method for generating a continuous mathematical model of a plurality of features common to subjects in a subject group, said method comprising:
         selecting a plurality of sample data sets from each subject in the subject group
   wherein each said sample data set is of a different feature in the plurality of features;
         selecting a set of expansion functions to be used in the representation of each of the
   sample data sets;
         mathematically expanding each member of each said sample data set in the form of a
   summation of results of multiplying each said expansion function in said set of expansion

functions of said data set by a different mathematical parameter wherein said expanding determines a value for each of said different mathematical parameters;

deriving a corresponding distribution function for each of said mathematical parameters;

generating a continuous mathematical model for each said feature from said derived distribution functions and said expansion functions of said feature;

correlating said generated mathematical models for each said features; and

generating the continuous mathematical model of the plurality of features based on said deriving and said correlating.

19.   A method in accordance with Claim 18, wherein each feature in said plurality of features is of a different physiological conditions affecting said subject group.

20.   A method in accordance with Claim 19, wherein said different physiological conditions are different diseases.

21.   A method for generating a continuous mathematical model of a plurality of features common to subjects in a subject group, said method comprising:

selecting a plurality of sample data sets from each subject in the subject group wherein each said sample data set is of a different feature in the plurality of features;

selecting a set of expansion functions to be used in the representation of each of the sample data sets;

mathematically expanding each member of each said sample data set in the form of a summation of results of multiplying each said expansion function in said set of expansion functions of said data set by a plurality of different mathematical parameters wherein said expanding determines a value for each of said plurality of mathematical parameters;

deriving a corresponding distribution function for each of said mathematical parameters;

generating a continuous mathematical model for each said feature from based on said derived distribution functions and said expansion functions of said feature;

correlating said generated mathematical models of said features; and

generating the continuous mathematical model of the plurality of features based on said correlating.

22.   A method in accordance with Claim 21, further comprising:

determining existence of dependency correlations between said selected parameters in said plurality of mathematical parameters; and

decorrelating said correlated selected parameters based on said determining, wherein said generating said continuous mathematical model for each said feature is also based on said generated probability distribution and said decorrelating.

23.   A method in accordance with Claim 22, wherein said dependency correlations are first order dependency correlations.

24.   A method in accordance with Claim 20, wherein said mathematically expanding is accomplished using a Fourier expanding function and wherein said mathematical parameters are coefficients of said Fourier expanding function.

25.   A method in accordance with Claim 21, wherein said mathematically expanding is accomplished using a Hybrid expanding function.

26.   A method in accordance with Claim 21, further comprising:

generating a simulated subject from said continuous mathematical model.

27.   A method in accordance with Claim 18, wherein said mathematically expanding is accomplished using a Fourier expanding function.

28.   A method in accordance with Claim 18, wherein said mathematically expanding is accomplished using a Hybrid expanding function.

29.   A method in accordance with Claim 27, wherein said mathematical parameters are coefficients of said Fourier expanding function.

30.   A method in accordance with Claim 18, wherein said determined value of said mathematical parameters is an estimated value of said parameters.

31.   A method in accordance with Claim 18, further comprising:
    generating a simulated subject from said continuous mathematical model.

32.   A system for generating a continuous mathematical model of a feature common to subjects in a subject group, said system comprising:
    means for selecting a sample data set from each subject in the subject group;
    means for selecting a set of expansion functions to be used in the representation of the sample data set;
    means for mathematically expanding each member of said sample data set in the form of a summation of results of multiplying each said expansion function in said set of expansion functions by a different mathematical parameter wherein said expanding determines a value for each of said different mathematical parameters;
    means for deriving a corresponding distribution function for each of said mathematical parameters; and
    means for generating the continuous mathematical model of the feature from said derived distribution functions and said expansion functions.

33.   The system of Claim 32, wherein said means for mathematically expanding utilizes a Fourier expanding function.

34.   The system of Claim 32, wherein said means for mathematically expanding utilizes a Hybrid expanding function.

35.   The system of Claim 32, wherein said feature is a physiological condition affecting said subject group.

36.   The system of Claim 35, wherein said physiological condition is a disease.

37.   The system of Claim 33, wherein said mathematical parameters are coefficients of said Fourier function.

38.   The system of Claim 32, wherein said determined value of said parameters is an estimated value of said parameters.

39.   The system of Claim 32, further comprising:

        means for generating a simulated subject from said continuous mathematical
    model.

40.   The system of Claim 37, wherein each expansion function is a deterministic function of age of each subject.

41.   A system for generating a continuous mathematical model of a feature common to subjects in a subject group, said system comprising:

        means for selecting a sample data set from each subject in the subject group;

        means for selecting a set of expansion functions to be used in the representation of
    the sample data set;

        means for mathematically expanding each member of the sample data set in the form
    of a summation of results of multiplying each said expansion function in said set of
    expansion functions by a plurality of different mathematical parameters wherein said
    expanding determines a value for each of said plurality of mathematical parameters;

        means for deriving a corresponding distribution function for each of said plurality of
    mathematical parameters; and

        means for generating the continuous mathematical model of the feature based on
    said derived distribution functions and said expansion functions.

42.   The system of Claim 41, further comprising:

        means for determining existence of dependency correlations between said
    mathematical parameters in said plurality of mathematical parameters; and

means for decorrelating said determined correlated mathematical parameters, wherein said means for generating the continuous mathematical model of the feature also utilizes said generated probability distribution and said decorrelating.

43.   The system of Claim 42, wherein said dependency correlations are first order dependency correlations.

44.   The system of Claim 41, wherein said means for mathematically expanding is accomplished using a Fourier expanding function.

45.   The system of Claim 41, wherein said means for mathematically expanding is accomplished using a Hybrid expanding function.

46.   The system of Claim 44, wherein said mathematical parameters are coefficients of said Fourier function.

47.   The system of Claim 41, wherein said determined value of said mathematical parameters is an estimated value of said mathematical parameters.

48.   The system of Claim 41, further comprising:
        means for generating a simulated subject from said continuous mathematical model.

49.   A system for generating a continuous mathematical model of a plurality of features common to subjects in a subject group, said system comprising:
        means for selecting a plurality of sample data sets from each subject in the subject group wherein each said sample data set is of a different feature in the plurality of features;
        means for selecting a set of expansion functions to be used in the representation of each of the sample data sets;
        means for mathematically expanding each member of each said sample data set in the form of a summation of results of multiplying each said expansion function in said set of

expansion functions of said data set by a different mathematical parameter wherein said expanding determines a value for each of said different mathematical parameters;

means for deriving a corresponding distribution function for each of said mathematical parameters;

means for generating a continuous mathematical model for each said feature from said derived distribution functions and said expansion functions of said feature;

means for correlating said generated mathematical models for each said features; and

means for generating the continuous mathematical model of the plurality of features based on said deriving and said correlating.

50.   The system of Claim 49, wherein each feature in said plurality of features is of a different physiological conditions affecting said subject group.

51.   The system of Claim 50, wherein said different physiological conditions are different diseases.

52.   A system for generating a continuous mathematical model of a plurality of features common to subjects in a subject group, said system comprising:

means for selecting a plurality of sample data sets from each subject in the subject group wherein each said sample data set is of a different feature in the plurality of features;

means for selecting a set of expansion functions to be used in the representation of each of the sample data sets;

means for mathematically expanding each member of each said sample data set in the form of a summation of results of multiplying each said expansion function in said set of expansion functions of said data set by a plurality of different mathematical parameters wherein said expanding determines a value for each of said plurality of mathematical parameters;

means for deriving a corresponding distribution function for each of said mathematical parameters;

means for generating a continuous mathematical model for each said feature based on said derived distribution functions and said expansion functions of said feature;

means for correlating said generated mathematical models of said features; and

means for generating the continuous mathematical model of the plurality of features based on said correlating.

53.   The system of Claim 52, further comprising:

means for determining existence of dependency correlations between said selected parameters in said plurality of mathematical parameters; and

means for decorrelating said correlated selected parameters based on said determining, wherein said means for generating said continuous mathematical model for each said feature also utilizes said generated probability distribution and said decorrelating.

54.   The system of Claim 53, wherein said dependency correlations are first order dependency correlations.

55.   The system of Claim 52, wherein said means for mathematically expanding utilizes a Fourier expanding function.

56.   The system of Claim 52, wherein said means for mathematically expanding utilizes a Hybrid expanding function.

57.   The system of Claim 55, wherein said mathematical parameters are coefficients of said Fourier function.

58.   The system of Claim 52, wherein said determined value of said mathematical parameters is an estimated value of said parameters.

59.   The system of Claim 52, further comprising:

means for generating a simulated subject from said continuous mathematical model.

60.   The system of Claim 49, wherein said means for mathematically expanding utilizes a Fourier expanding function.

61.   The system of Claim 49, wherein said means for mathematically expanding utilizes a Hybrid expanding function.

62.   The system of Claim 60, wherein said mathematical parameters are coefficients of said Fourier function.

63.   The system of Claim 49, wherein said determined value of said parameters is an estimated value of said parameters.

64.   The system of Claim 49, further comprising:
       means for generating a simulated subject from said continuous mathematical model.

65.   A system for generating a continuous mathematical model of a feature common to subjects in a subject group, said system comprising:
       a first selector subsystem adapted to select a sample data set from each subject in said subject group;
       a second selector subsystem adapted to select a set of expansion functions to be used in the representation of the sample data set;
       a mathematical expansion subsystem adapted to mathematically expand each member of said sample data set in the form of a summation of results of multiplying each said expansion function in said set of expansion functions by a different mathematical parameter wherein said expanding determines a value for each of said different mathematical parameters;
       a derivation subsystem adapted to derive a corresponding distribution function for each of said mathematical parameters; and

a generator subsystem adapted to generate said continuous mathematical model of said feature from said derived distribution functions and said expansion functions.

66.   The system of Claim 65, wherein said mathematical expansion subsystem is adapted to perform a Fourier expanding function.

67.   The system of Claim 65, wherein said mathematical expansion subsystem is adapted to perform a Hybrid expanding function.

68.   The system of Claim 65, wherein said feature is a physiological condition affecting said subject group.

69.   The system of Claim 68, wherein said physiological condition is a disease.

70.   The system of Claim 66, wherein said mathematical parameters are coefficients of said Fourier function.

71.   The system of Claim 65, wherein said determined value of said parameters is an estimated value of said parameters.

72.   The system of Claim 65, further comprising:
       a generator subsystem adapted to generate a simulated subject from said
   continuous mathematical model.

73.   The system of Claim 70, wherein each expansion function is a deterministic function of age of each subject.

74.   A system for generating a continuous mathematical model of a feature common to subjects in a subject group, said system comprising:
       a first selector subsystem adapted to select a sample data set from each subject in
   said subject group;

a second selector subsystem adapted to select a set of expansion functions to be used in the representation of the sample data set;

a mathematical expansion subsystem adapted to mathematically expand each member of said sample data set in the form of a summation of results of multiplying each said expansion function in said set of expansion functions by a plurality of different mathematical parameters wherein said expanding determines a value for each of said plurality of mathematical parameters;

a derivation subsystem adapted to derive a corresponding distribution function for each of said plurality of mathematical parameters; and

a generator subsystem adapted to generate said continuous mathematical model of said feature from said derived distribution functions and said expansion functions.

75. The system of Claim 74, further comprising:

a subsystem adapted to determine existence of dependency correlations between said mathematical parameters in said plurality of mathematical parameters;

a decorrelation subsystem adapted to decorrelate said determined correlated mathematical parameters; and

a generator subsystem adapted to generate said continuous mathematical model of said feature from said generated probability distribution and said decorrelation.

76. The system of Claim 75, wherein said dependency correlation is a first order dependency correlation.

77. The system of Claim 74, wherein said mathematical expansion subsystem is adapted to perform a Fourier expanding function.

78. The system of Claim 74, wherein said mathematical expansion subsystem is adapted to perform a Hybrid expanding function.

79. The system of Claim 77, wherein said parameters are coefficients of said Fourier function.

80.   The system of Claim 74, wherein said determined value of said parameters is an estimated value of said parameters.

81.   The system of Claim 74, further comprising:

a generator subsystem adapted to generate a simulated subject from said continuous mathematical model.

82.   A system for generating a continuous mathematical model of a plurality of features common to subjects in a subject group, said system comprising:

a first selector subsystem adapted to select a plurality of sample data sets from each subject in said subject group wherein each said sample data set is of a different feature in said plurality of features;

a second selector subsystem adapted to select a set of expansion functions to be used in the representation of each of the sample data sets;

a mathematical expansion subsystem adapted to mathematically expanding each member of each said sample data set in the form of a summation of results of multiplying each said expansion function in said set of expansion functions of said data set by a different mathematical parameter wherein said expanding determines a value for each of said different mathematical parameters;

a derivation subsystem adapted to derive a corresponding distribution function for each of said mathematical parameters;

a first generator subsystem adapted to generate a continuous mathematical model for each said feature from said derived distribution functions and said expansion functions of said feature;

a correlator subsystem adapted to correlate said generated mathematical models for each said features; and

a second generator subsystem adapted to generate said continuous mathematical model of said plurality of features based on said derivation and said correlation.

83.   The system of Claim 82, wherein each feature in said plurality of features is of a different physiological conditions affecting said subject group.

84.   The system of Claim 83, wherein said different physiological conditions are different diseases.

85.   A system for generating a continuous mathematical model of a plurality of features common to subjects in a subject group, said system comprising:

a first selector subsystem adapted to select a plurality of sample data sets from each subject in said subject group wherein each said sample data set is of a different feature in said plurality of features;

a second selector subsystem adapted to select a set of expansion functions to be used in the representation of each of the sample data sets;

a mathematical expansion subsystem adapted to mathematically expand each member of each said sample data set in the form of a summation of results of multiplying each said expansion function in said set of expansion functions of said data set by a plurality of different mathematical parameters wherein said expanding determines a value for each of said plurality of mathematical parameters;

a derivation subsystem adapted to derive a corresponding distribution function for each of said mathematical parameters;

a first generator subsystem adapted to generate said continuous mathematical model for each said feature from said derived distribution functions and said expansion functions of said feature;

a correlator subsystem adapted to correlate said generated mathematical models of said features; and

a second generator subsystem adapted to generate said continuous mathematical model of said plurality of features based on said correlation.

86.   The system of Claim 85, further comprising:

a subsystem to determine existence of dependency correlations between said selected parameters in said plurality of mathematical parameters;

a decorrelation subsystem to decorrelate said correlated selected parameters based on said determining;

a generator subsystem to generate said continuous mathematical model of said feature from said generated probability distribution and said decorrelating;

a correlator subsystem adapted to correlate said generated mathematical models of said features; and

a generator subsystem adapted to generate said continuous mathematical model of said plurality of features based on said correlation.

87.   The system of Claim 86, wherein said dependency correlation is a first order dependency correlation.

88.   The system of Claim 85, wherein said mathematical expansion subsystem is adapted to perform a Fourier expanding function.

89.   The system of Claim 85, wherein said mathematical expansion subsystem is adapted to perform a Hybrid expanding function.

90.   The system of Claim 88, wherein said parameters are coefficients of said Fourier function.

91.   The system of Claim 85, wherein said determined value of said parameters is an estimated value of said parameters.

92.   The system of Claim 85, further comprising:

a generator subsystem to generate a simulated subject from said continuous mathematical model.

93.   The system of Claim 82, wherein said mathematical expansion subsystem is adapted to perform a Fourier expanding function.

94.   The system of Claim 82, wherein said mathematical expansion subsystem is adapted to perform a Hybrid expanding function.

95.   The system of Claim 93, wherein said parameters are coefficients of said Fourier function.

96.   The system of Claim 82, wherein said determined value of said parameters is an estimated value of said parameters.

97.   The system of Claim 82, further comprising:

a generator subsystem adapted to generate a simulated subject from said continuous mathematical model.